Pearson/Prentice Hall
CME Project Geometry, Geometry

Degree of Evidence regarding the Standards for Mathematical Practice:

Limited Evidence

Summary of evidence:

1. **Make sense of problems and persevere in solving them**. In the chapters reviewed, there are numerous opportunities for students to analyze the mathematics and to explain their findings. Open-ended questions are presented in the sections, but the practice problems at the end of the section are more closed. The Mathematical Reflections seem to be less about reflection and more about practicing applications and explaining concepts in your own words. There is a formulaic problem-solving process involving the Habits of Mind. There are some opportunities for students to analyze through error analysis to determine if they grasp the concept (e.g. p.226 #1c) as well as to state the assumptions they made (e.g. p.227 #8). Students are asked to provide explanations in the "Write About It" exercises present in each problem set. Open-ended problem-solving opportunities are inherent in the activities and in-class experiments rather than in the practice problems. There are frequent opportunities for students to create a problem-solving plan and to carry it out, checking their results for accuracy.
2. **Reason abstractly and quantitatively**. Application problems are presented throughout the text. It would be difficult to skip the application problems as they are ingrained in the practice problems for most sections. Students are frequently asked to create a model for the problem situation within the experiments and the on-your-own activities. Students are sometimes led to derive the formulas on their own. Most of the time, though, it seems the formula is presented alongside the activity intended to help them derive it, which can lead to some students to not persevere in the activity on their own. In the chapters reviewed, there are numerous application problems or examples spread throughout each unit. Questions are geared towards students discovering the algorithm for the mathematics on their own or in groups, but students are presented the algorithm or formula immediately following the activity directions, robbing students of the motivation to find the formula for themselves.
3. **Construct viable arguments and critique the reasoning of others**. In the chapters reviewed, there are some instances where students are asked to explain their answer to various questions in the unit. This explanation is geared more towards writing a justification with the occasional opportunity to share with others. Sharing with others is mainly geared towards sharing results, not generalizations or problem-solving approaches. In the chapters reviewed, there is no mention of students sharing their methods with the class or working together in the student resources, but it is encouraged through the strategies presented in the teacher resources. Justifications are present in the "Write About It" and "Take It Further" problems, but it would be up to the teacher to assign these problems. The opportunities for students to justify their thinking are available throughout the text, but they rely heavily on how the teacher facilitates the lesson and on what problems are assigned for practice.
4. **Model with Mathematics**. In the chapters reviewed, students are frequently asked to create a specific mathematical model to work with to solve a particular problem. The text does seem to direct students in the type of model to use and does not specify that the students have choice in what model to use. As students progress in their understanding of the concept covered in the lesson, they continue to build the connection among tables, equations, and situations. Overall, there are frequent opportunities for students to create and work with models while grappling with the concepts they are asked to discover on their own. Students move from the models to the

symbolic representations or formulas they have conjectured and tested on their own.

5. **Use appropriate tools strategically.** Geometric constructions are presented early on in Chapter 1. Students are directed to deduce how to complete the constructions on their own. Constructions are then used in later units to help students discover properties and concepts on their own (e.g. p.219 Pythagorean Theorem proof). Students are asked to use a variety of tools to complete in-class experiments including nets, tracing paper, and etc. There is limited reference to the use of graphing calculators inherent in the chapters reviewed. A calculator is mentioned specifically in the unit for trigonometric relationships. There is a "handbook" on pages 712-724 for using the TI-Nspire graphing calculator for the teacher to implement. Chapter 1 introduces the use of Geometry software to construct figures. There is little mention later of specifically using computer software, but the experiments calling for constructions could be done with the computer. The text seems to allow for some flexibility of choice in the use of technology or the use of hands-on tools in order to complete the in-class experiments. It would be up to the teacher to incorporate. There do not seem to be built-in opportunities to discuss the appropriateness of a particular tool for a particular task.
6. **Attend to precision.** Examples use proper notation and are precise. Sections include a discussion of proper notation (e.g. p.369). In the chapters reviewed, the importance of precise communication is mainly dealt with regarding proper notation only and less about communicating efficiently. Communication about mathematics is presented in sections titled Minds in Action that follow the conversation of two students working through the math concept of that section. This does not guarantee that students will adopt the communication skills in to their own practice. Students are given some opportunities to share their solutions with others, but the opportunities are mentioned mainly in the "For Discussion" sections and would be up to the teacher to implement. Students are directed at times to share their results in the exercises on Practicing Habits of Mind (p.292)
7. **Look for and make use of structure**. In the chapters reviewed, there are opportunities for students to look at examples and then generalize the mathematics. Students usually discover the mathematical rule for themselves based on noticing patterns. Most activities lead the students to the desired outcomes and are less open-ended. The activities are sometimes more about following the prescribed set of directions or just verifying a mathematical truth already outlined for the students. Students are frequently asked to refer to the prior knowledge learned in Chapter 1 to tackle later problems. It would be crucial for students to complete Chapter 1 to be successful in later activities. Overall, there is frequent connection to prior learning. There are numerous opportunities for students to generalize their findings.
8. **Look for and express regularity in repeated reasoning.** Some practice problems direct students to create formula shortcuts (e.g. #6 on p.239). In the chapters reviewed, there are many problems where students are asked to notice a pattern and generalize the rule. Students conduct in-class experiments to help in making generalizations (e.g. triangle congruence on p.83). Overall, there are frequent opportunities for students to generalize a pattern to determine a rule. The rule is typically printed immediately following the activity students are trying to complete in order to find the rule, and could cause a lack of motivation on the students' part to persevere in the discovery on their own.